

The Canadian Entomologist

VOL. LIV.

ORILLIA, JANUARY, 1922.

NO. 1.

POPULAR AND PRACTICAL ENTOMOLOGY

NOTES ON THE MIGRATION OF *MELANOPLUS ATLANIS* RILEY IN NORTHERN
NORTH DAKOTA IN 1920.
OBSERVATIONS IN *BOTTINEAU AND RENVILLE COUNTIES.

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Introduction.

During the summer of 1920, an intensive, as well as extensive, grasshopper campaign was carried on in all of the twenty-four townships of Renville County, North Dakota. Altogether, over 400 tons of bran were mixed into poison mash and systematically spread. This work was carried on according to the Grasshopper Law of 1918 of North Dakota and ample supervision was provided. Each township had either one or two grasshopper supervisors in charge of the mixing and distribution of the mash while the writer was in charge of all operations. Likewise Canada, immediately to the north of Renville County, waged a well organized campaign against the 'hoppers. Some other counties in North Dakota, because of lack of funds, were unable to meet the emergency. The following data will show what an unexpected, extensive migration from these did to upset the work where grasshopper control was effected.

The species concerned has been identified as the Lesser Migratory Locust, *Melanoplus atlanis* Riley. Its habits of flight, as observed in this migration, were very unlike those of *M. atlanis*. They could better be attributed to the presumably extinct Rocky Mountain migratory locust, *Melanoplus spretus* Uhl.

Migratory Habits.

The migratory habits of *M. atlanis* have previously been thought to be as follows:

1. Flight caused by food becoming tough and unpalatable, or the lack of any food at all.
2. Flight may be either crosswise to, or with the prevailing wind.
3. Flight is low, usually within a few feet of the ground.

* The observations in Bottineau County were made by Mr. A. C. Burrill, at that time Special Field Agent of the Bureau of Entomology, U.S. Dep. Agr. The writer is greatly indebted to Mr. Burrill for his co-operation in obtaining corroborative data and other courtesies.

4. Flight is not extensive. 'Hoppers fly from field to field or may migrate a few miles.

The first migration noted at Mohall, N.D., was on July 9th, within ten days after the first adults appeared. It was observed, both in Renville and Bottineau Counties, that the 'hoppers would rise up out of such green crops as wheat and barley which were yet succulent, and fly off. This occurred repeatedly during the season. Often times a swarm would settle down in a wheat field one afternoon and leave the next day, even though the food at hand was abundant and palatable. In this manner, a field of excellent wheat near Mohall was infested and abandoned four times with but slight damage done.

The 'hoppers would take off for flight in a stiff breeze. Through the hot part of the day, the wind would often alternate between calms and stiff breezes. During the calms, no 'hoppers could be seen coming out of a field. When the wind would come up and wave the grain, a buzzing could be heard as they swarmed out. They would mill for a short time, then, when an altitude of 15 to 30 feet was gained, take off with the wind. As is shown in the tabulated chart, the direction of flight was always with the wind, though milling would occur during calms.

Until August 12th, the height of flight was estimated with the aid of a yellow glass which enabled the observer to look directly against the sun. The thickest portion of the swarm appeared to be 500 feet above ground. On August 12th, data on the altitude of flight was taken by the writer in an airplane. The swarm was found to be densest at 500 to 800 feet. A few scattering individuals were found when the altimeter registered 1650 feet above ground.

That the migrations were extensive, is shown by our data often taken 50 miles apart. No definite information as to the distance each individual would fly can be given. Yet, we determined the speed of flight of individuals near the ground by means of an automobile, to be 20 miles per hour. Just how long each individual was in the air cannot be stated. Flight normally begins at 11.00 A.M. and lasted until 4.00 P.M. This information, together with the data on the altitude of flight and the known fact that 'hoppers alighting in a field one afternoon would fly on the next day, seems to indicate that many miles were covered.

The Bearing on Control Measures.

In the case of this species, the length of flight coupled with the fact that 'hoppers often leave succulent fields, has an important bearing on control measures. It means that when the residents of some one territory have been delinquent in control measures, and those of some other territory have waged a successful campaign, the parties of the first instance may cause the reinfestation of the fields of the parties of the second instance and upset some of their good work. Also farmers in infested areas do not well understand the outcome of such an extensive migration and either grasp at the hope that all their 'hoppers will leave or believe that poisoning is useless. Thus a control campaign may be demoralized at just the time operations should be continued with intensity.

Observations on Flight and Relation of Weather Conditions to Such.

Date—July, 1920	Time of Observation	Direction Wind Blew Towards	Direction Migration Went Towards	Wind	Weather Conditions Temperature Rain	Height of Flight includes all altitudes below that noted	Remarks	Location of Observer
9	2PM	NW	NW	Very Slight	Hot & Clear	500 ft.	Milling some, due to air being quiet at times.	M.
9	3½PM	NNW	NNW	ditto	ditto	300 ft.	ditto.	A.
10	1PM	NNW	NNW	Very Slight	"	200 ft.	"	B.
12	3½PM	NNW	NNW	Slight	Cool & Cloudy	200 ft.	Slight, local migration.	B.
14	3PM	S	S	Strong Slight	Clear	500 ft.	Slight migration.	W.
14	3PM	E	E		"	50-200 ft.	Hugh swarms making sun grey. Lower swarms going crosswise to upper.	A.
15	12M	N	N	Stiff	Hot & Clear	1000 ft.	Huge swarms.	M.
15	12M	NE & NW	NE & NW	Stiff & Calms	"	Low	Observed in Auto trip all the way, Bottineau to Mohall.	
16					Cool & Cloudy		No migration.	M.
17	1PM	SE	SE	Stiff	Hot & Clear	50-500 ft.	Swarms scant lasting several hours.	M.
17	1-2PM	SSE	SSE	Mod'ate	"	400 ft.	Inch wide slot 12" from face gave estimation of 100 per sec.	B.
18	2PM	NW	NW	Slight	"	50-500 ft.	All swarms very high lasting several hours.	M.
19					Cool & Cloudy		No migration.	M.
19	1PM	N	N	Slight	Cool & Clear	200 ft.	Very heavy flight.	B.
20	11AM	WNW	WNW	Stiff	Hot & Clear	500 ft.	Light swarms.	M.
20	2PM	WNW	WNW	Stiff	"	500 ft.	Huge swarms abating 2.30 P.M.	M.
21	1PM	NW	NW	Strong	Sultry & dry	500 ft.	Largest swarms to date going over until 4.30 P.M.	M.
22					Rainy Cloudy		No migration.	M.
23					"		"	M.
24					"		"	M.
25	10AM 2PM	NW	NW	Strong	Hot & Clear	500 ft.	Slight flight locally in the afternoon.	M.
26	2PM	ESE	ESE	"	"	500 ft.	Large swarms at rate of speed estimated 20mi. hr.	M.
26	3PM	E	E	"	"	500 ft.	Slight swarms.	Mb.
27	12M	NNE	NNE	Slight	"		Only small swarms.	M.
27	12M	NE	NE	"	Cool	300 ft.	ditto.	L.
28	1PM	SSE	SSE	Strong	Hot & Clear	500 ft.	Fair sized swarms.	M.
28	12M	S	S	"	"	500 ft.	ditto.	B.
29	1PM	SE	SE	"	"	500 ft.	"	M.
29	12-3	SE	NW	Very Slight	"	100 ft.	First time hoppers have gone against the wind.	A.
30				Cool & Cloudy			No migration.	M.

Date—July, 1920	Time of Observation	Direction Wind Blew Towards	Direction Migration Went Towards	Wind	Weather Conditions Temperature Rain	Height of Flight Includes all altitudes below that noted	Remarks	Location of Observer
30	1PM	N&NW	N&NW	Slight	Hot & Clear	200 ft.	A few going desultorily 10 mi. south of Antler.	A.
31	1PM	NW	NW	Very Slight	"	2000 ft.	Largest swarm yet observed, hazing the sun. Milling during calms and drifting Northward.	M.
31	1PM	?	NW	"	"	200 ft.	Few flying.	B.
Aug.								
1	1PM	NW	NW	Stiff	"	500 ft.	Only scattered individuals	M.
1	2PM	N&NW	N&NW	"	"	300 ft.	Lower hoppers milling.	B.
2	2PM	NNE	NNE	"	"	500 ft.	Small flight all at high altitudes.	M.
3	12-2PM				Rain		Rain at 11A.M. No flight.	M.
4	1PM	SSW	SSW	Very Slight	Hot & Clear	2000 ft.	Huge swarms drifting slowly and milling during calms.	M.
5					Rain		No flight.	M.
6					Cloudy		No flight.	M.
7	11AM	NE	NE	Slight	Warm & Clear	500 ft.	Small flight.	M.
8	12M	E	E	Strong	Warm & Clear	300 ft.	Fair sized swarms.	M.
9	1.30PM	NE	NE	Stiff	Hot & Clear	500 ft.	Fair sized swarms.	M.
10	11AM	"	"	"	"	500 ft.	Fair sized swarms.	M.
11	11AM	SE	SE	Slight	"	1000 ft.	Large swarms.	M.
12	10AM-3PM	SE	SE	"	"	2000 ft.	Large swarms lasting all day.	M.

NOTE: Abbreviations are as follows: Antler—A; Bottineau—B; Lansford—L; Mohall—M; Maxbass—Mb; and Westhope—W. The altitude observations are only approximate.

AUSTRALIAN SARCOPHAGIDAE; NEW SPECIES AND DATA CONCERNING OTHERS¹ (DIPTERA).

BY R. R. PARKER,
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This paper is the first of several which the writer expects to prepare describing new species of Sarcophagidae from Australia and presenting data concerning other species found on that continent. That early writers have described some of the species concerned is very probable but since it is impossible to recognize their species and the types are inaccessible, the only course open is to neglect them, leaving to the future questions of priority. In this peculiar group of insects this course seems fully justified.

1. Contribution from the entomological laboratory of the Montana State College, Bozeman, Mont.

***Sarcophaga queenslandae*, n. sp.**

Holotype, ♂ : collection of R. R. Parker.

Allotype, ♀ : collection of R. R. Parker.

Male.—Length 12 to 13 mm.; one row of black cilia behind eyes; cheek vestiture white; gena with a few small black hairs above transverse impression and dorsal to these some minute golden hairs; bristles bordering lateral mouth margin not extending backward along lower edge of cheek: vestiture of sides of thorax mostly white (includes lower portion of mesopleura); spiracular hairs light colored; anterior and middle coxae with some white hairs, short and inconspicuous on third; hind tibia with posterior beard only; ventral surface of first three abdominal nota and first four ventral plates (except posterior margin of fourth and sometimes of third) with white hair; viewed from rear each forceps prong shows a small group of short, close-set bristles just anterior to forward bend.

Head.—Viewed from front parafrontals, genae and anterior portions of cheek vary from grayish with light golden tinge to light gold. Breadth of front at narrowest part less than half eye width; cheek height greater than one-third that of eye. Front prominent; at its narrowest part frontal vitta about same width as each parafrontal, its sides not parallel. Third antennal segment more than twice that of second. One row of black cilia behind eyes. Cheek vestiture white. Gena with a few small black hairs near eye orbit above transverse impression and dorsal to these some minute golden hairs. Palpi dark.

Chaetotaxy.—Lateral verticals absent; vibrissae inserted very slightly above line of oral margin; each row of twelve or thirteen frontals extending below base of yitta, lower portion divergent; bristles bordering lateral mouth margin not extending back beyond transverse impression.

Thorax.—Mesonotum clothed with medium long, reclinate, bristle-like hairs. Vestiture of side of thorax largely of white hair; scutellar bridge with white hairs. Spiracular hairs light.

Wings.—Third vein with bristles; costal spine vestigial; section III of costa longer than section V; alulae fringed with dark hair. Epaulets black.

Legs.—Anterior and middle coxae with some white hair, short and inconspicuous on third. Posterior coxa with prominent "brush": anterior face of femur with three rows of bristles; tibia with posterior beard only. Anterior and posterior ventral rows of bristles of middle femur present, former of short bristles and complete, latter present on about distal third: anterior face of tibia with a single bristle; submesotibial bristle vestigial.

Chaetotaxy.—Anterior dorsocentrals (one or more) but little differentiated from vestiture of praescutum; acrostichals and inner presuturals absent: only last two pair of posterior dorsocentrals at all well developed, anterior to these two or more very weak pairs; prescutellar acrostichals absent: scutellar apicals present: three sternopleurals; lower stenopleura with bristles and white hair.

Abdomen.—Clothed with short reclinate bristles, beneath with white hair except ventral surface of fourth notum (which bears much longer black hairs) and posterior margin of fourth ventral plate (sometimes of third also): ventral plates quite distinctly rectangular.

Chaetotaxy.—Third segment with two dorsal marginals and usually with two or three pairs of laterals.

Genital Segments (figs. 1, 2).—Basal portion of fifth ventral plate keeled, lamellae long and narrow with very long fine hairs on distal portion. First segment; about twice length of second, gray pollinose, ground color brownish or blackish, vestiture partly longer and much coarser than that of first. Forceps; at about three-fourths way to tip bent forward, then narrowing rapidly to tip which ends in a very small tooth, basal portion clothed with a very long, fine hair tending to be tufted, posterior surface clothed with hairs nearly to bend (see profile view), viewed from behind prongs approximately nearly to bend and just beyond bend each with a small group of short, close set bristles.

Genitalia.—(See figure.) Anterior clasper very broad basally narrowing to bluntly rounded tip.

Female.—Differs from male in following essential characters: breadth of front at its narrowest part about three-fourths eye width; frontal vitta at its narrowest point not as wide as each parafrontal; black hairs on gena fewer (usually one or two) or absent: mesonotum clothed with very short reclinate bristles; abdominal nota clothed with short reclinate bristles throughout except that part of ventral portion of first notum; first ventral plate has white hairs; dorsal marginal, usually short and decumbent, occasionally absent: sixth ventral plate orange brown, bipartite, with shallow lobes posteriorly; fifth notum same color as preceding nota, edge fringed with bristles, opening triangular (posterior edge of sixth ventral plate as base).

Described from six male and eight female specimens.

Range.—AUSTRALIA; *North Queensland*;—Gordonvale, Cairns, 1917 (J. W. Illingworth); Townsville, (F. H. Taylor, H. Priestley);—*North Territory*; (G. F. Hill).

The holotype and allotype are from the Gordonvale material.

The Gordonvale specimens were reared from carrion by Dr. J. F. Illingworth.

In general appearance this species resembles *S. illingworthi*, n. sp., but both sexes are easily distinguished by the absence of prescutellar acrostichals and the presence of white hair on the mesopleura and first coxae. In females of *S. illingworthi* the fifth notum (first genital) is puckered dorsally, while in *S. queenslandae* it is not. *S. frogatti* Taylor is separated from this species by its smaller size, character of vestiture of ventral plates, and genital characters in the male. In the female the character of the fifth notum is distinctive. The female of *S. frogatti* has white hairs behind the mesopleural bristles.

***Sarcophaga illingworthi*, n. sp.**

Holotype, ♂; collection of R. R. Parker.

Allotype, ♀; collection of R. R. Parker.

This species is so similar to *S. queenslandae* that it seems unnecessary to give more than a summary of the essential characters.

Male.—Length, 11-15 mm. Usually ten to twelve pairs frontal bristles: side of thorax with considerable white hair but mesopleura clothed with black hair; white hairs on scutellar bridge; spiracular hairs dark; middle coxa with

some white hairs dorsally, few and inconspicuous on first and third; posterior coxa with "brush"; posterior tibia with posterior beard, anterior beard much weaker but present; praesutural acrostichals weakly differentiated, the prescutellar pair present; ventral surface of first and second, and sometimes of third abdominal notum, and the first three ventral plates (sometimes only anterior portion of first) except for marginal hairs, clothed with white hairs: base of fifth ventral plate (fig. 5.) with keel, lamellae narrow, distally with medium long hair, proximally each with a small angular "flap" margined with bristles: forceps basally with very long hair (not tufted); basal portion of prongs joined by the light colored connecting chitinized (?) band, prongs long and gently curved forward, approximated to near tips, latter somewhat divergent, viewed from behind each prong just behind tip with a short lateral row of short bristles and above these a fringe of long hairs resembling a beard: genitalia specific (see figs. 3 and 5).

Female.—Essential characters similar except as follows:—white hairs on abdomen confined to the first ventral plate and ventral surface of first notum: fifth notum (first genital) same color as those preceding, puckered and with slight emargination dorsally, ventrally overlapping ventral plates.

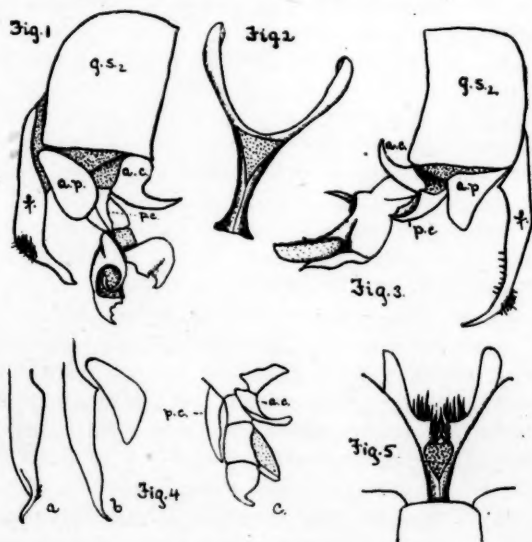


Fig. 1. *Sarcophaga queenslandae*, n. sp., profile view of genital segments. Fig. 2. Same, fifth ventral plate. Fig. 3. *S. illingworthi*, n. sp., profile view of genital segments. Fig. 4. *S. froggatti* Taylor;—a, posterior view of a forceps prong; b, profile view of a forceps prong showing accessory plate; c, penis and claspers. Fig. 5. *S. illingworthi*, fifth ventral plate. g.s., Second genital segment. a.c., Anterior clasper. p.c., Posterior clasper. a.p., Accessory plate. f., Forceps.

Described from four male and four female specimens.

Range.—AUSTRALIA: North Queensland; Gordonvale, 1917 (J. F. Illingworth), Townsville (F. H. Taylor); North Territory; Darwin (G. F. Hill).

The holotype is from Gordonvale, and the allotype from Townsville, North Queensland.

See discussion following *S. queenslandae* for remarks on separation from *S. illingworthi* and that following *S. froggatti* for separation from that species.

Sarcophaga froggatti Taylor.

1917. *Sarcophaga froggatti* Taylor, Bull. Ent. Res., vol. 7, pt. 3, Jan., p. 265. Original description and notes on habits.

Types.—Collection of Australian Institute of Tropical Medicine, Townsville, North Queensland, Australia.

Male.—Length, 7 to 11 mm. Viewed from front parafrontals, genae and anterior portions of cheeks light golden pollinose; one row of black cilia behind eyes; cheek vestiture white; gena with minute golden or whitish hairs near eye orbit, sometimes a few black hairs near transverse impression; bristles below vibrissae not extending backward along lower cheek border (perhaps inconstant): side of thorax with considerable white hair, that on mesopleura only on lower anterior portion; anterior and middle coxae with some white hairs, small and indistinct on third coxa; posterior tibia not bearded; leg vestiture short: anterior dorsocentrals present but weak; presutural pair of acrostichals weakly developed; at least four pairs dorsocentrals, only last two at all strong; prescutellar acrostichals, absent or if present very weak; ventral surfaces of first three abdominal nota with white hair: posterior half of fourth and posterior margin of third ventral plate with black hair, other first four plates with white hair: fifth ventral plate without bristles; genital segments brownish, first sometimes grayish pollinose: seen from rear forceps prongs approximately about two-thirds length, then narrowing and divergent, bending slightly forward, then the slender ends convergent but not meeting, and the tips again turned outward; on outer side at convergent bend each prong with a very few short bristles (not easily seen, see fig. 4a): genitalia specific (fig. 4c).

Female.—Essential characters similar except as follows:—white hairs on mesopleura present on lower half and posterior to mesopleura bristles; vestiture of abdominal nota of short black decumbent bristles throughout, except for white hairs on ventral surfaces of first notum and a few on second; first ventral plate with white hairs, a few anteriorly on second; fifth notum (first genital) same color as those preceding, puckered and slightly emarginate dorsally.

Range.—AUSTRALIA; *Queensland*;—Winton (E. V. Hines) (cited by Taylor), Roma, (F. H. Taylor); *North Territory*;—Darwin, Aug. 2, 1913 (G. F. Hill). One specimen of uncertain locality, record by W. W. Froggatt.

Taylor, 1917, records the maggots of this species attacking sheep. The specimen taken by Froggatt bears the following label, "Horse, Black Tank, Bred Feb. 21, 1914, W.W.F."

The female is very close to that of *S. illingworthi*, but is smaller and lacks prescutellar acrostichals. The first genital notum is practically alike in both species. *S. illingworthi* lacks white hair on the mesopleura while it is present in *S. froggatti*.

For separation from *S. queenslandae* see discussion following that species.

In the female a few bristles are sometimes found bordering the cheek along the lateral mouth margin. In the male the lack of the bristles was constant in all specimens examined.

This species has been identified by me from a single female paratype sent me by F. H. Taylor. This specimen was a reared form and undersized but I feel reasonably confident that the species here concerned is *S. froggatti*.

SOME NEW AND RARE COLEOPTERA FROM SOUTHWESTERN FLORIDA.

BY W. S. BLATCHLEY,
Indianapolis, Ind.

I reached Dunedin,¹ Florida, where I have my winter home, on November 18, 1920, and, with the exception of three weeks, collected about there until April 18, 1921. During the nine winters I have been in Dunedin I have taken the great majority of beetles which can be found in that vicinity at that season, yet each winter I manage to secure a number of interesting forms.

On March 1 I started on a three weeks' trip to the most southern available points on the west coast. My first stop was at Lakeland, a junction point on the A.C.L. railway, where I spent two days. I had collected about there on two previous occasions at the same season and therefore took little of especial interest. A number of the large tortoise beetle, *Chelymiorpha geniculata* Boh., were beaten from bunches of Spanish moss in which they were hibernating. The usual food plant of this species is the creeping goat's-foot morning glory, *Ipomoea pes-caprae* Sweet, but as that plant grows only along the sea-shore, the beetle evidently uses an allied one for food in the interior, Lakeland being 30 miles from the coast. Another capture was a fine specimen of the handsome Cerambycid, *Ancylocera bicolor* Oliv., which was swept from an oak shrub.

At Lakeland I was joined by J. H. Williamson of Bluffton, Ind., who was collecting dragonflies, and on March 3rd we took the train for Ft. Myers, the most southern railway station on or near the west coast. Ft. Myers has a population of about 10,000 and is located on the Caloosahatchie River, 14 miles from the Gulf Coast. The river is a tide water stream to above the town, the black mangrove and other maritime shrubs lining its banks in the uncleared areas. The winter had been very dry and the first day and a half's collection yielded little but what I had taken on previous visits at the same season. However on the third morning I began sifting about an extinct or wet-weather pond which, during the rainy season, covers shallowly an area of 15 to 20 acres, south of the railway and just outside of the city limits. With the exception of one or two small pools which were full of dead or dying fish the pond was wholly dry, and its mucky bed filled with the decaying stems of pickerel weed, *Pontederia cordata* L., and several species of arrow-head, *Sagittaria*, smart weed, *Polygonum*, and other semi-aquatic vegetation. For several hours I sifted with good success the debris from about the roots of these plants in the dryer portions of the old pond area. Happening to pull up some of the *Pontederia* roots from a damp mucky place near one of the pools I noted several species of water beetles in the muck. That

¹See Can. Ent., xlix, 1917, 137.

afternoon I returned with a trowel and a soap box, and using the latter as a seat, as near the edge of the pools as I could get without miring down, I began pulling and digging up the decaying pickerel weed roots and stems and shaking them over a newspaper spread out on a thin board which I held on my knees. I soon found I had struck "pay dirt," as aquatic and semi-aquatic beetles by scores were unearthed. I worked thus about this pond for the greater part of three days, sifting at intervals but digging in the muck most of the time, and secured 109 species of beetles besides a number of subaquatic Hemiptera and Orthoptera. A number of the beetles are mentioned on the pages which follow. Others of special interest were *Tachys albipes* Lec., *Chlaenius perplexus* Dej., *Colpius inflatus* Lec., *Bidessus subsericeus* Bl., *Laccophilus gentilis* Lec., *Celina angustata* Aubé, *Cercyon variegatum* Shp., *Oosternum costatum* Shp., etc. Among the Rhynchophora taken, which will be treated elsewhere, were *Smicronyx quadrifer* Casey, not before known from Florida, and a new species of *Hyperodes*. The three most abundant beetles about the pond were *Tachistodes* (*Agonoderus*) *testaceus* (Dej.) taken mostly by sifting, *Hydrovatus compressus* Shp. from the muck, and *Disonychia pennsylvanica conjugata* (Fab.), which occurred by hundreds on *Polygonum*.

On the afternoon of March 8 we started with the mail carrier in a Ford machine for Caxambus, a fishing station on Marco Island, 90 miles distant. We were due there at 7 P.M. but after various mishaps and the enforced use of three different flivvers, we arrived at 11.30. Here, on account of the dry season and consequent lack of fresh water on the island, the collecting was poor. Mosquitoes, a brackish or salt-water species, and therefore not disheartened by the drouth, were present in hordes. Two days were spent in taking what we could find and early in the morning of the third day my companion, discouraged by the drought and the mosquitoes, started back overland to Ft. Myers, while I took passage in the "mail boat," an 18-foot open gasoline launch, for Chokoloskee, my original objective, 35 miles farther south, where I arrived at noon on March 11.

Chokoloskee, a fishing village on a key or island of the same name—one of the "Ten Thousand Islands" off the southwest coast of Florida—is the most southern postoffice and settlement on the west coast. Most of the neighboring islands are covered with mangrove and overflow at high tide. Chokoloskee was originally somewhat higher and was therefore used by the Seminole Indians and their predecessors as a village site. It must have been so used for centuries, as almost the entire area of 107 acres is covered with shell heaps, "kitchen-middens," to a thickness of three to eight feet, and in one place is a look-out mound, a fourth of an acre in area and 27 feet in height, of the same materials. There is no stream and only one or two small brackish water ponds on the island. Rain or cistern water is used exclusively by the inhabitants. The vegetation is sparse, the shrubs and trees for the most part stunted, though fairly abundant in species and number. I spent five days on the island, and one day at Everglade, another settlement five miles to the northeast. My collecting was done mostly by beating into an umbrella and by sweeping, and except in Rhynchophora, the results were poor. The fauna is very nearly the same as at Cape Sable and Key West, not more than 20 species being found which had not been

taken by me at those stations. In the rainy season, May to August, there is probably good collecting to be had here, at least I was so told by my landlady, Mrs. C. G. McKinney, who for years has collected butterflies and Orthoptera for northern supply houses. At that season, however, mosquitoes are at their best, and they were bad enough for me in March.

I left Chokoloskee for Ft. Myers on March 18, by a little freight steamer which plies between the two ports. Had one afternoon's collecting at Marco, where we passed the night, and part of the next one at the extinct pond at Ft. Myers. It was on this last afternoon at the pond that I took the second known specimen of my *Pachydus princeps*. I did not recognize it at the time, else I might have been there yet, searching for others. The next morning I took the train for Tampa and from there to Dunedin by automobile bus, arriving at 4 P.M.

Dicaelus quadratus Lec.²—A single female, 25 mm. in length was taken March 6 beneath an old boat on the margin of the extinct pond at Ft. Myers. It is the same as a species from St. Petersburg, identified for me by Frederic Blanchard as *D. carinatus* Dej. and recorded by me under that name.³ I did not at that time have a copy of LeConte's description of *quadratus* available, but with it now in hand there is no doubt that the two specimens are his species, which he states is .96 of an inch in length. Horn, in his synoptical table,⁴ separates *quadratus* from *carinatus* only by the humeral carina being "moderately elevated and acute near the base only" in *quadratus* and "very long and more elevated, acute in the entire length" for *carinatus*. In his bibliography he gives the length of *quadratus* as 25 mm., and of *carinatus* as 20 mm. The question arises, may not these two nominal species represent the different sexes of one? If so, it would have to bear Dejean's name.

Dicaelus subtropicus Casey.—The types of this species⁵ were from Palm Beach, Fla. A single specimen was taken on February 9 beneath a chunk on Hog Island, opposite Dunedin.

The species of *Badister* with unspotted elytra form a difficult group to separate satisfactorily with words. The original descriptions of LeConte are conflicting in a number of instances with his later keys⁶ and as a consequence the species are badly confused in most collections. Three species of this group have been taken by me in Florida, one of which appears to be undescribed.

Badister flavipes Lec.—One specimen March 18 from the extinct pond at Ft. Myers. In the original description the intervals are said to be convex, whereas in the keys of LeConte it is included under division with intervals flat. In the specimens at hand, from Little River and Ft. Myers, the three innermost intervals are subconvex, the outer ones flat.

²In the notes and descriptions which follow, the sequence and nomenclature is that of Leng's new "Catalogue of the Coleoptera of America north of Mexico." Where the generic name used by him is different from that heretofore in common use the old name in parenthesis follows the new, e. g. *Pseudamphasia* (*Antsodactylus*) *sericea* Harris.

³Can. Ent., xlv, 1914, 63.

⁴Bull. Brook. Ent. Soc., iii, 1880, 51.

⁵Memoirs iv, 1913, 151.

⁶Trans. Amer. Ent. Soc., viii, 1880, 165; Bull. Brook. Ent. Soc., v, 1882, 7.

***Badister seclusus* sp. nov.**

Elongate-oval. Black, shining, the elytra and under surface strongly iridescent; narrow margins of thorax and elytra brownish-piceous; antennae piceous, the two basal joints paler; palpi and legs dull brownish-yellow, head as wide as base of thorax, finely alutaceous, impunctate, its front portion distinctly declivent and concave with prominent raised margins; eyes very large and prominent; antennae nearly half as long as body, the third joint more than twice as long as second, slightly shorter than fourth, joints 4 to 11 very slender, more than four times as long as broad. Thorax short, widest at apical third, the sides thence oblique and distinctly converging to base, which is but two-thirds as wide as apex; side margins narrow to behind the middle, then gradually widening and reflexed to base; hind angles obtuse, not rounded; median line deep, entire; basal impressions narrow, deep. Elytra at base one-third wider than base of thorax; humeri broadly rounded, sides straight and parallel from basal fourth to apical fifth, then broadly rounded into the obtuse apex; striae deep, intervals subconvex, the second with two large dorsal punctures on its inner margin, the first at middle, the other at apical fourth. Length 4.8 mm.

Dunedin, Fla., March 10—April 19. Two specimens taken by sweeping ferns in a dense damp hammock. Evidently allied to *flavicornis* Casey, described⁷ from Iowa but much smaller and with dark antennae. The basal side margins of thorax are much more strongly widened and reflexed than in *reflexus*, the hind angles more distinct. It is possible that this is the species listed as *B. micans* Lec. by Schwarz, and by Leng, but it is a much smaller species with very different form of thorax from what I have as *micans* from Indiana, which was compared with LeConte's labelled type. As pointed out by Casey, loc. cit., the original description of *micans* calls for a species $4\frac{1}{2}$ lines (9 mm.).

Badister reflexus Lec.—Four specimens from the pond at Ft. Myers; one from Tallahassee. Leng records it⁸ only from Suwanee. The Florida specimens agree with those from Indiana in having the hind angles "very obtuse and rounded," as stated by LeConte in his original description, whereas in his key they are mentioned as "obtuse, not rounded."

Pseudamphasia (Anisodactylus) sericea (Harris)—This common northern Carabid has not heretofore been reported from Florida, though it is known from Louisiana. Two specimens were taken from beneath debris on the shore of Lake Okeechobee near Moore Haven on March 2, 1918. Casey⁹ has recently erected for it the genus *Pseudamphasia*.

Pronoterus semipunctatus (Lec.)—From the muck about the Pontederia roots in the pond at Ft. Myers I took three specimens of a small Dytiscid which I was unable to identify, even as to genus, with the literature available. Thinking that it perhaps might be a West Indian form, I sent a specimen to A. J. Mutchler of the American Museum of Natural History. He replied that it was not represented in the Museum collection either from the United States or West Indies, and suggested that I refer it to H. C. Fall, who has been making a recent

⁷Memoirs, ix, 1920, 208.

⁸Bull. Amer. Mus. Nat. Hist., xxxiv, 1915, 581.

⁹Memoirs v, 1914, 195.

study of the smaller Dytiscidae. This I did, and Mr. Fall reported that: "It seems almost surely to be the rare *Canthydrus semipunctatus* (Lec.) described from Michigan¹⁰. It is also probably *Pronoterus punctipennis* Sharp, described from Brazil! On comparing your specimen with LeConte's unique type in the Cambridge Museum I find that it differs only in being a little smaller, with somewhat darker elytra and with the posterior angles of the hind coxae a little more blunt. I cannot feel so sure that Sharp's species is the same, but the short description is perfectly characteristic so far as it goes. It is not a *Canthydrus*, but must be referred to Sharp's genus *Pronoterus* and, LeConte's name being the older, must be known as *Pronoterus semipunctatus* (Lec.). I do not know that LeConte's specimen has ever been duplicated in this country, so your find is one of great interest. Truly a remarkable distribution if the Michigan, Florida and Brazilian specimens are all one thing!"

Pachydrus (Coelambus) princeps (Blatch).—The second known specimen was taken March 19 from amidst the decaying stems of pickerel weed in the extinct pond at Ft. Myers. The unique type was from the east shore of Lake Okeechobee. It was described¹¹ as a *Coelambus*, but Fall states¹² that it belongs to *Pachydrus*, a tropical genus, hitherto unrepresented in this country.

Celina slossoni Mutch.—One specimen, April 1, from a mass of water weeds in a small pond near Dunedin, known heretofore only from Sanford, Enterprise and Lake Worth, on or near the east coast.

Derallus altus (Lec.).—Three specimens were taken from the debris of the extinct pond at Fort Myers. The only other Florida record is that of mine from Dunedin¹³.

Helobata (Helopeltis) larvalis (Horn.).—Two specimens were secured from the under side of the decaying leaves of pickerel weed at the Ft. Myers pond. They clung to their cover much as did a small mollusk of the genus *Ancylus* which was frequent on the leaves. While the beetle has been taken at several stations in Florida, the only definite one hitherto recorded is Sarasota, where I found a single individual in 1911.

***Bacanius subdepressus* sp. nov.**

Broadly oval, subdepressed. Black, shining; femora piceous, antennae, tibiae and tarsi dark reddish brown; the globular antennal club much paler. Head two-thirds as wide as thorax, minutely and sparsely punctate. Thorax twice as wide as long, sides feebly curved, strongly margined, this margin continuous and uninterrupted to tips of elytra; disk, finely, evenly and rather sparsely punctate, base with a single transverse row of smaller punctures. Elytra as wide at base as, and about two-thirds longer than, thorax, without marginal carinae or discal striae; sparsely, rather coarsely punctate, the punctures on basal half in part aciculate or subtrigose. Pygidium, very minutely punctate. Prosternal process broad, one-half longer than wide, striate each side, minutely punctate, truncate at tip. Metasternum very broad, both it and abdomen very minutely and sparsely punctate. Length .8—1 mm.

¹⁰Proc. Amer. Phil. Soc., xvii, 1878, 595.

¹¹Can. Ent., xlii, 1914, 64.

¹²The N. Amer. species of *Coelambus*, 1919, p. 1.

¹³Bull. Amer. Mus. Nat. Hist. xli, 320.

Frequent and gregarious, November to April, about Dunedin, beneath the bark of dead water oak and dead white bay; also taken beneath cow dung and by sitting in damp mucky places. Much less convex than any of our other described species.

(To be Continued.)

NEW SPECIES OF CANADIAN SYRPHIDAE, (DIPTERA) Pt. II.

BY C. HOWARD CURRAN,

Orillia, Ont.

***Cynorhina robusta*, new species**

Thorax and scutellum moderately long, pale yellow pilose; abdomen black pilose except the immediate basal corners which bear yellow pile; head brown and black pilose; face chiefly piceous, but yellow above.

Length 11 mm. ♀. Face piceous, immediately below the antennae, more so at the sides, yellow, the cheeks black; face thinly silvery pollinose, the side margins sparsely whitish pilose; in profile the sub-keel-shaped face is slightly produced below the middle indicating a long tubercle. Antennae black, third joint circular and reddish brown in color, the base below reddish; arista black. Front shining black, somewhat narrowed above; antennal process narrowly reddish apically. Pile of the front black; under the eyes yellowish, on the lower half of the occiput brown, black on the upper half, moderately long below. Posterior orbits narrowly grayish white pollinose.

Thorax shining deep blue-black; mesopleurae margined with reddish except below. Dorsum brassy, and clothed with rather long pale yellow pile; pleurae bare except on the meso and sternopleurae; scutellum similar in color and pile to dorsum.

Abdomen wholly shining black, with a strong purplish reflection, wholly short black pilose except the basal angles which bear longer yellowish pile. First two ventral segments yellow apically at the sides.

Legs blackish, short black pilose, longer on the femora; femora tipped with yellow; bases and ends of the tibiae yellow or yellowish; first three joints of the anterior four and second and third of the hind tarsi, yellow.

Wings moderately brownish, less so outwardly, their bases very conspicuously yellow; stigma brownish, but not readily discerned. Squamae whitish yellow, with similar colored fringe. Halteres yellow.

Holotype, ♀, British Columbia, in the Canadian National Collection, Ottawa.

A robust, conspicuous species resembling *Criorhina*, best characterized by the color of the face and the pile, which is longer and denser than usual.

***Cynorhinella*, new genus**

Face considerably produced downwards, tuberculate; side margins distinct; eyes contiguous; antennae short, third joint roundish; thorax longer than broad, without bristles; abdomen slender, twice as long as the thorax, tapering in the male; femora all somewhat swollen, the hind ones considerably so and arcuate, at the end below with an angular projection exteriorly, as in

Tropidea, a smaller one anteriorly; hind tibiae a little arcuate, not ending in a spur. Wings as in *Cynorhina*.

Genotype, *C. canadensis*, new species.

I am unable to place the following specimen in any genus known to me, and it traces out to *Cynorhina* in Williston's manual, and apparently comes closest to this genus but the thickened, arcuate hind femora with the projection apically, and the more distinct facial side margins separate it. It is related to *Chilosia* and *Chrysochlamys* by the last mentioned character, but there is no semblance of bristles and the shape of the abdomen is distinctive. Superficially it moderately resembles a *Brachypalpus* but the facial shape and tubercle at once preclude it from that genus.

***Cynorhinella canadensis*, new species**

Length 10 mm. *Male*. Face chestnut brown, concave below the antennae with a prominent rounded tubercle about the middle, below which it is slightly produced to the not prominent oral margin; side margins well defined, as in *Chilosia*, the facial slopes with fine whitish pollen, the side margins with sparse whitish pile; cheeks and frontal triangle shining, concolorous with the face; vertical triangle brown, the sides of the triangle about equal, with brown pile; occiput shining chestnut, with whitish pile below and brownish above. Thorax shining blueblack, the dorsum with yellow pile, which is intermixed with black on the middle, and black pile on the borders; pleurae yellowish brown, with yellowish pile, the pile black above. Scutellum concolorous with dorsum, with slightly longer black pile. Abdomen narrow, and gradually narrowing after the second segment, in color shining blue-black, the posterior margins of the second and third segments a little more blackish on the median two-thirds; hypopygium black. Pile of abdomen yellowish on basal angles, becoming white on the hypopygium, and black on the ends of the second and third segments. Legs chestnut brown. Wings distinctly luteous; stigma yellowish. Squamae and halteres white.

Holotype, ♂, Inverness, B.C., July, 1910, (J. H. Keen), in the Canadian National Collection, Ottawa.

***Mallota columbiae*, new species**

Eyes bare; abdomen wholly black pilose; wings with a brown spot; thorax densely yellowish pilose. Distinguished from *cimbiciformis* by the shape of the angulation of the third vein, from *sackeni* by the open marginal cell.

Length 14 mm. *Female*. Face shining black, the sides covered with grayish yellow pollen, forming a complete band below the antennae. Front shining black, the sides with yellow pollen; pile of the head black, except a few whitish hairs on the cheeks; below the eyes there is a very distinct, triangular rust-colored spot. Antennae brown, third joint more reddish, large, broader than long; arista reddish. Thorax shining greenish black; anteriorly, except two narrow sub-median stripes, yellowish pollinose, in some lights a broader interrupted more shining stripe laterally. Scutellum light yellow. Pile of thorax and scutellum light yellow, the humeri and pleurae below with blackish hairs. Abdomen shining black, black pilose, but the sides of the second segment narrowly, with yellow hairs. Femora black, with black pile, tibiae more brownish,

tarsi reddish; tips of the femora, narrow base of the hind and broad bases of the anterior four tibiae, yellowish red; pile of the tibiae very short, brownish. Wings almost hyaline, with a brown cloud at the middle. Third vein with the angulation more V-shaped than U-shaped.

Holotype, ♀, Penticton, B.C., June 5, 1919, (R. C. Treherne), in the Canadian National Collection, Ottawa.

This species comes close to *cimbiciformis*, but is at once distinguished by the clouded wings, wing venation and facial profile. *M. sackeni* has the marginal cell closed. No other species with the abdomen practically entirely black pilose have been described; there are very few yellow hairs on the sides of the second abdominal segment.

***Mallota diversipennis*, new species**

Eyes bare; antennae luteous-reddish; third longitudinal vein with the loop V-shaped; wings clouded; marginal cell open; pile of abdomen rather sparse, mixed black and fulvous.

Length, 15 mm. ♀. Face black, shining, covered, except a broad median stripe and the cheeks, with yellowish gray pollen, and sparse, long reddish yellow pile; front broad, the sides, more widely at the middle, with golden pollen, the pile rather sparse, reddish yellow, up the middle with black hairs, and chiefly black hairs across the ocellar triangle. Antennae luteous-reddish, shining, (third joint missing). Posterior orbits with brownish pile, but more fulvous below and at the vertex.

Thorax black, a little shining, with reddish pile; humeri reddish, sections of pleurae bordered with reddish and very slightly whitish pollinose; dorsum with slight indications of pollen before the suture. Scutellum yellow with moderately long, fairly abundant pale yellow pile.

Abdomen shining bluish black, with a purplish tint in some reflections; pile on first and second segments rather long, whitish, on the triangular median posterior half of second segment short, stiff, brown, elsewhere on the abdomen shorter, fulvous, sparsely intermixed with brown, on the third segment with a broad posterior band of short brown pile.

Femora brownish, hind ones more reddish; tibiae and tarsi yellowish red, the tibiae darker apically; pile of the anterior femora entirely black, rather long posteriorly, on the middle ones brown, but longer reddish yellow posteriorly, on the hind ones wholly reddish yellow; tibiae and tarsi with yellow pile; hind femora much thickened, the tibiae a little arcuate.

Wings with a distinct brownish cloud across the middle beyond which the color is somewhat luteous, the base hyaline. Angulation of third longitudinal very acute and V-shaped.

Holotype, ♀, in the Canadian National Collection, Ottawa, bearing no label. It is probably a Canadian specimen.

I cannot associate this species with any described. It comes nearest *palmerae* Jones but is distinct in the reddish antennae and color of the pile, that on the legs being especially distinctive. There is a short stump of vein into the first posterior cell from the tip of the V-shaped angulation.

***Chilosia hunteri*, new species**

Eyes pilose; antennae reddish yellow; arista bare; facial slopes without pile; thorax whitish or yellow pilose, without spines, except a weak one on the mesopleura; abdomen light pilose.

Length 8 to 9 mm. *Male*. Face shining black, a little pubescent opposite the tubercle; side margins and below the antennae thinly silvery pollinose; face almost straight from base of antennal prominence to the oral margin which is on a plane with the antennal base, the tubercle fairly prominent, on a plane with the tip of antennal prominence, a little concave between the antennal prominence and tubercle, and shortly, deeply concave below the tubercle; the lower edge of the short nose-shaped tubercle is on a plane with the lower eye margins; side margins and cheeks short yellowish pilose. Frontal triangle shining black; finely moderately punctured, usually with a narrow sulca in the middle; the polished broad W on the antennal prominence reddish or obscurely so; pile of the frontal triangle black, rarely mixed with yellow; posterior orbits narrowly silvery pollinose, with white pile; remainder of occiput thinly grayish pollinose. Antennae with the first two joints polished brownish red, the third bright reddish yellow, not large, sub-quadrate, a little rounded apically. Eyes short brownish yellow pilose.

Thorax and scutellum shining metallic greenish black, with moderately short pale yellowish to yellow pile, a little deeper colored at the corners and usually with some black hairs intermixed here; there may be one to three weak bristles on the top of the mesopleura.

Abdomen of the same metallic greenish black color, but not quite so shining, and a little more sparsely finely punctured; second segment with a goblet-shaped opaque spot widest posteriorly and poorly outlined; an abbreviated, interrupted, basal opaque fascia on the third segment. Pile usually all pale yellowish or yellow but there may be some black hairs towards the end of the second segment.

Legs shining black, the trochanters obscurely reddish apically; femora tipped with reddish; tibiae with the basal quarter and a little less than the apical quarter reddish, the anterior ones a little more extensively reddish; tarsi all black, except that the base of the anterior four basitarsi may be reddish. The long hairs on the legs are yellow, the short ones black, except on the anterior of the front tibiae and the tarsal pads. Wings a little luteous, less so postero-apically; stigma and base of the wings brownish; 8 to 10 short bristles on R_{4+5} ; tip of first posterior cell almost truncate, the last section of the fourth vein sinuous. Squamae slightly tinged with yellow, with white fringe of pile. Halteres reddish yellow, the end of the knob brown.

Holotype, ♂, Teulon, Manitoba, May 17, 1920 (A. J. Hunter) in the Canadian National Collection, Ottawa.

Paratypes, ♂, Teulon, Man., May 14, 1920, (A. J. Hunter) in the collector's collection; ♂, Teulon, May 17; ♂, Winnipeg, Man., May 7, 1910, (J. B. Wallis); in the writer's collection; ♂, Winnipeg, May 7, 1910, (J. B. Wallis) in the collector's collection.

This species is evidently close to *petulca* Will. but may be known by the bare arista, absence of scutellar bristles and the color of the vestiture. From

baroni it is distinguished by its reddish antennae, absence of spines and the color of the vestiture.

I take great pleasure in naming this species in honor of Dr. A. J. Hunter, who has sent me many fine specimens of Syrphidae, and whose efforts have added largely to our knowledge of the Syrphid fauna of Manitoba.

I place a female collected by Dr. Hunter at Teulon on May 14, 1920, here with some doubt as it appears rather darker.

Female. Face shining black, a little more prominent than in the male, as the oral tip is as prominent as the antennal base, the tubercle more prominent; third antennal joint larger, twice as broad as the second joint. Front brassy in the middle, the sides smoother, black; a slender longitudinal median shining darker stripe which is more or less impressed, and a transverse depression above the antennae; pile blackish above the antennae and at the ocelli, elsewhere fulvous; occiput dull, thinly grayish yellow pollinose, the pile whitish below, cinereous above. Eyes short fulvous pilose.

Thorax shining slightly brassy black, with a median rather broad vitta and a broad one sub-medially on each side, less shining and darker. The pile on the thorax and scutellum is very short fulvous, but appears to be darker on the darker vittae, and on the immediate sides of the dorsum there are a few longer bristle-like black hairs and the pile on the end of the scutellum is partly black and subappressed.

Abdomen shining black with a brassy reflection, the disc of the second segment deep black. The pile is very short subappressed fulvous, appearing darker on the third and base of the fourth segment on the disc in some lights; on the base of the abdomen and anterior angles of the segments it is longer, on the fifth segment with some black hairs apically.

Legs as in the male but the tarsi brownish, the first joint of the anterior four tarsi reddish. Squamae white with a yellow fringe and pale yellow pile. Halteres yellowish red.

***Myiolepta lunulata* Bigot.**

Bigot, (Ann Soc. Ent. France, 1884, page 537) described a specimen of *Myiolepta* from Oregon, giving it the specific name *lunulata*. As is the case with most of Bigot's descriptions the insect is not recognizable, and as a result Williston, (Syn. N. Am. Syrph., 1886) placed *lunulatus* as a synonym of *varipes* Loew. In the Museum of the California Academy of Sciences is a specimen of *Myiolepta* which is moderately like *varipes*, but there are certain differences which I can only regard as specific, and hence give a description of the specimen using Bigot's name *lunulatus* rather than a new one.

The specimen was collected at Huntington Lake, Fresno Co., California, at an altitude of 7,000 ft. by Mrs. E. P. Van Duzee and is a male.

Abdominal coloration in the male very much like the female of *M. varipes*; pile of abdomen depressed, mostly black; antennae dirty brownish yellow; wings clouded *only across the middle*; arista blackish.

Male. Length 7 mm. Swollen antennal base, cheeks and face from just above the tubercle to the mouth edge scarcely wider than the tubercle, deep shining black, the face elsewhere obscured by grayish yellow pollen. In pro-

file the face is very deeply concave; from the antennal prominence to the deepest part of the cavity it is almost straight, thence it is straight to the anterior oral margin, which does not project quite as much as the antennal prominence; the tubercle, situated in the middle of the lower straight portion, is moderately large, more rounded above, sub-pointed on its lower portion and almost at a right angle to the lower facial plane. Frontal triangle shining black, the sides narrowly grayish yellow pollinose. Vertical triangle black. Pile sparse, whitish, on the face restricted to the side margins.

Thorax and scutellum shining deep black; in front with an arch of grayish pollen extending between the humeri; pile short, yellow, subappressed; on the pleurae more erect, lighter. Scutellum margined with sparsely placed short black hairs.

Abdomen shining black; second segment except the sides and the base of the third segment medially, more opaque. First segment grayish pollinose. Second segment with a half-crescent-shaped yellow spot, extending along the latero-frontal margin a short distance, then curving back; behind and laterally to lunule the ground color is inclined to be lighter fading to black. Abdominal pile short, subappressed, on the abdominal basal angles, on the lighter areas and the basal triangles of the third segment, longer, whitish, more erect.

Legs black; bases of the tibiae piceous; hind tarsi and middle tarsi yellowish basally. All the femora thickened and bearing spines below. Hind tibiae without a triangular protuberance below. Wings subhyaline, darkened on the middle anteriorly. Stigma luteous, occupying the basal two-thirds of the cell.

Differs from *varipes* in that the wings are not clouded beyond the middle; pile mostly black on the abdomen; in the male of *varipes* the sides of the second abdominal segment are yellow; the face in *lunulata* is more produced and below the tubercle it is not receding to the oral margin as in *varipes*, but is continued forward.

NEW SPECIES OF THE SYRPHID GENUS CHILOSIA FROM CANADA (DIPTERA)

BY C. HOWARD CURRAN,

Orillia, Ont.

***Chilosia sensua*, new species.**

Eyes bare; arista bare; wings strongly tinged with brownish yellow; scutellum without bristles; abdomen partly opaque.

Male. Length 7 mm. Face and front shining black, the former thinly grayish pollinose across below the antennae, pile of the side margins short, sparse, whitish, of the frontal and vertical triangles, black, of the posterior orbits, whitish below, yellow above. Eyes bare. Vertical triangle short, eyes touching for about the length of the vertical triangle. Frontal triangle large, a little prominent, with a metallic blue reflection in the middle, densely finely punctured; in the middle, when viewed from in front with an elongate triangular depression, its narrow base resting upon the antennal arch, its upper point almost reaching the juncture of the eyes. First antennal joint shining black, second piceous or brownish, third reddish, its end and upper portion more or less blackish, but

the ground color considerably obscured by whitish pubescence, in shape broader than long, flattened above, its upper apex more acutely rounded than the lower; arista black, bare, considerably thickened basally for about one-third its length (not as much as in *C. crassiset*a of Europe), then suddenly thinned.

Thorax and scutellum shining greenish black, the dorsum with a slight brassy reflection, covered with moderately short fulvous pile, but a stripe of black pile from the humeri to the base of the wings, and some black hairs about the postalar callosities.

Abdomen metallic greenish black; first segment with an opaque area on each side; second segment opaque black, the sides shining, the lateral ends of the opaque only very slightly concave and a little broader posteriorly; the opaque on the third segment is a little narrower than that on the second, does not quite reach the posterior margin and is not at all concave laterally. Pile of abdomen wholly fulvous.

Legs black, tips of the femora, bases of the tibiae and the apices of the front four tibiae reddish; basal tarsal joints brownish. Wings distinctly luteous, more clouded across the middle; stigma luteous; the first posterior cell ends in an acute angle. Squamae whitish yellow fringed with pale yellow pile. Halteres reddish.

Holotype, ♂, Orillia, Ontario, May 5, 1921 (Curran), in the writer's collection.

This species is related to *crassiset*a Becker of Europe, but the arista is not so much enlarged; differs from *capillata* in black pile of head, truncate shape of opaque of the abdomen and lighter colored legs, the face almost similar in profile; from *comosa* in the shape of the opaque markings and brownish wings; from *nigripennis* and *versipellis* in having yellow pile on thorax, etc.; from *parva* in the dark legs; from *ontario* in smaller size, different shaped antennae, arista, etc.

THE FAMILY POSITION OF PLATYPREPIA AND OTHER NOTES. (LEPID.)

BY HARRISON G. DYAR, A.M., PH.D.,

U. S. National Museum, Washington, D. C.

Some remarks by Dr. McDunnough seem to call for a little elucidation (Can. Ent., LIII, 167, 1921). I am quoted as claiming that *Platyprepia* belongs to the *Hypsid*ae. This claim was not intended as original, as Dr. McDunnough's remarks seem to imply, but in following the established literature of the group it is well known that in Sir George Hampson's classic work, *Platyprepia* is omitted from the *Arcti*idae, together with *Callimorpha* (in the

Ed. Note.—The above article serves to elucidate Dr. Dyar's rather negative views in regard to the family position of *Platyprepia* but still leaves the correct position of this genus in doubt. The fact remains that the anastomosis of veins 7 and 8 of secondaries in *P. guttata*, a so-called Hypsid, is as long as, or even longer than that found in *Arctia caia*, the typical Arctiid.

Author's Note.—In estimating the length of the anastomosis, I do not count from the base of the wing to the point where veins 7 and 8 separate, which appears to be Dr. McDunnough's standard, but from the point where veins 7 and 8 fuse to where they separate again. In *Platyprepia*, these veins are free at the base, anastomose for about 3 mm., then separate. In *Arctia*, they are united to the base, making the length of the anastomosis about 7 mm. On this basis a more positive distinction can be made, and the reference of *Platyprepia* the Hypsidae retained.

European sense) and the groups which we used to call *Pericopidae*, *Nyctemeridae* and *Hypsiidae*. These we expect him to treat under the family *Hypsiidae* (*Callimorphidae*), except that his labors unfortunately terminated with the *Noctuidae*. I do not recall any statement by Hampson that *Platyprepia* belongs to the *Hypsiidae*; but this seemed the only possible inference from his work that had appeared. After 1902 I regarded it as negatively established, and hence my remark which Dr. McDunnough refers to was briefly made.

It is also true that Sir George defines the family *Hypsiidae* by having vein 8 of the hind wings connected with the cell by a bar. This can be verified by any of the *Hypsa* proper, and the definition remains unchanged in his latest publication (Nov. Zool., xxv, 389, 1918). However, in *Callimorpha*, the *Nyctemeridae* and *Pericopidae* the bar becomes a short anastomosis, as tacitly admitted by Hampson in his *Moths of India* (1894) where he places *Nyctemera* in the *Arctiidae*. The definition of the family thus becomes confused; but I have followed Sir George in his classification. Therefore Dr. McDunnough's remark that he would retain *Platyprepia* in "its present position in the *Arctiidae*" seems somewhat inappropriate, since *Platyprepia* has been omitted from the *Arctiidae* for the last twenty years by the most authoritative student of the world fauna, and not again restored by him in his latest reference (Cat. Lep. Phal. B. M., Suppl. vol. ii, 1920). If Dr. McDunnough wishes to differ from Hampson, which of course he has the right to do, the question of *Platyprepia* widens to include all of the *Pericopidae* and *Nyctemeridae*, for there is no difference that I can perceive in the venation. The anastomosis is shorter in these forms than in the *Arctiidae* in general, and if a more or less short anastomosis can be called a bar, it is possible to follow Hampson's classification, and this I suppose it is better to do if possible. Uniformity in nomenclature is so desirable that we should stretch a point to conform, if it can be done. For these reasons I would let *Platyprepia* remain in the *Hypsiidae* instead of transferring it to the *Arctiidae* as Dr. McDunnough proposes.

Dr. McDunnough further refers to a similarity of larvae and male genitalia; but this similarity probably runs through all the groups mentioned.

In the same article Dr. McDunnough refers the species *alpina* Quensel to *Arctia* after showing the generic separation from *Hyphoraia*. In this he agrees with Hampson, who made the same reference and separation previously (Cat. Lep. Phal. B. M., Suppl. ii, 500, 1920). Hampson does not record *A. alpina* from America; but the European Arctic Fauna is the same as the American Arctic, apparently entirely, as far as these forms are concerned.

THE ENTOMOLOGICAL SOCIETY OF ONTARIO—ANNUAL MEETING

The fifty-eighth Annual Meeting of the Entomological Society of Ontario was held at the University of Toronto during the week of December the twenty-eighth. The meeting was held at this time in order to afford our members an opportunity of meeting with the members of the Entomological Society of America and of the American Association of Economic Entomologists.

Among the members present were Dr. C. J. S. Bethune, Toronto, Ontario; Mr. J. D. Evans, Trenton, Ontario; Prof. J. H. Comstock, Ithaca, N.Y.; Dr. I. O. Howard, Washington, D.C.; Dr. E. P. Felt, Albany, N.Y.; Prof. E. M. Walker, Dr. W. A. Clemens, Dr. Craigie, Mr. Bigelow and Miss Norma Ford, Toronto University; Messrs. A. Gibson, Dr. Swaine, L. S. McLaine, R. C. Treherne, H. G. Crawford and F. C. Craighead, Dominion Entomological Branch, Ottawa; Profs. L. Caesar and A. W. Baker and Messrs. G. J. Spencer and W. G. Garlick, O. A. College, Guelph, Ont.; Miss Edna Mosher, Albuquerque, N. M.; Father Leopold, La Trappe, Ont.; Prof. W. H. Brittain, Truro, N.S.; Mr. F. J. A. Morris, Peterborough, Ont.; Dr. J. D. Detwiler, Western University, London, Ont.; Mr. C. H. Curran, Orillia, Ont.; Mr. W. E. Biggar, Hamilton, Ont.; Prof. A. V. Mitchener, M.A. College, Winnipeg, Man.; Dr. Matheson and Mr. H. C. Hockett, Cornell University, Ithaca, N.Y.; Drs. S. Hadwin and A. C. Baker, Washington, D.C.; and the following officers of the Dominion Entomological Branch:—Messrs. G. E. Sanders, Annapolis Royal, N.S.; J. D. Tothill, Frederickton, N.B.; C. E. Petch, Hemmingford, Ont.; W. A. Ross, Vineland Station, Ont.; H. F. Hudson, Strathroy, Ont.; Norman Criddle, Treesbank, Man.; E. H. Strickland, Lethbridge, Alta.; and W. Downes, Victoria, B.C.

The meetings were also well attended by members of the Entomological Society of America, the American Association of Economic Entomologists and others.

On Wednesday afternoon a meeting was held with the Entomological Society of America in Room 10, Medical building. The following papers were contributed by members of the two societies.

Algonquin Days,—F. J. A. Morris, Peterborough, Ont.

Hatching in Three Species of Neuroptera.—Roger C. Smith, Kansas State Agricultural Society.

Ecdysis in *Tmetocera Ocellana*.—S. W. Frost, Arendtsville, Pa.

Cocoon Spinning by Species of *Bucculatrix*.—O. A. Johannsen, Cornell University.

The Ventral Pro-Thoracic Gland of the Red-Humped Apple Caterpillar (*Schizura concinna*).—J. D. Detwiler, Western University.

Observations on a New Species of *Chrysops* From Central New York.—Raymond C. Shannon, Cornell University.

Are There Two Species of the Oyster-Shell Scale?—Grace H. Griswold, Cornell University.

A Classification of the Larvae of Tenthredinoidea.—H. Yuasa, University of Illinois.

The Phylogeny of the Gall Mites and a New Classification of the Suborder Prostigmata of the Order Acarina.—H. E. Ewing, United States National Museum.

The Syrphid Genera *Hammerschmidtia* and *Brachyopa* in Canada.—C. Howard Curran, Orillia, Ontario.

Taxonomic Results from a Study of the Genitalia of Male Syrphidae.—C. L. Metcalf, University of Illinois.

Report of the Lepidoptera of the Cornell Expedition of 1919-1920.—Wm. T. M. Forbes, Cornell University.

An Extreme Case of Delayed Fall Emergence of Hessian Fly (*Phytophaga destructor*)—W. H. Larrimer, United States Bureau of Entomology.

Importance of Insects in the Food of the Brook Trout.—W. A. Clemens, University of Toronto.

The Effect of Vitamines on the Growth of *Ephestia kuehniella* in Wheat Flour.—Charles H. Richardson, United States Bureau of Entomology.

On Friday afternoon the Society met with the American Association of Economic Entomologists when the following programme was delivered.

One Year of the Crop Protection Institute.—W. C. O'Kane, Durham, N.H.

Poisoned Molasses for the Destruction of Noctuid Moths.—E. H. Strickland, Ottawa, Canada.

The Western Wheat Stem Sawfly in Canada.—Norman Criddle, Treesbank, Manitoba.

Progress in Hessian Fly Control.—H. A. Gossard, Wooster, Ohio, and T. H. Parks, Columbus, Ohio.

European Corn Borer: Life History in Ontario.—H. G. Crawford, Ottawa, Canada.

European Corn Borer: Present Distribution in Ontario.—L. S. McLaine, Ottawa, Canada.

European Corn Borer: Control Under Ontario Conditions.—G. J. Spencer, Guelph, Ontario, Canada.

The Corn Borer Problem in New York State.—E. P. Felt, Albany, N.Y.

Chemotropism of Chinch Bug.—H. Yuasa, Urbana, Ill.

Observations on Insects Attacking Sorghum.—Wm. P. Hayes, Manhattan, Kansas.

The Onion Maggot in British Columbia Under Irrigated Conditions.—R. C. Treherne, Ottawa, Canada.

The Cabbage Root Maggot.—L. Caesar, Guelph, Canada.

A Forest Insect Survey from the Air.—J. M. Swaine, Ottawa, Canada.

Forest Sample Plot Studies in a Spruce Budworm Outbreak.—F. C. Craighead, Ottawa, Canada.

The Life History, Habits and Injuries of the Maple Case-Bearer.—Glenn W. Herrick, Ithaca, N.Y.

On Friday evening an entomologists' dinner was held at the Prince George Hotel under the auspices of the American Association of Economic Entomologists. Many members of our society accepted the kind invitation of this society to be present.

The business meeting was held on Saturday morning. Considerable discussion in regard to the financial condition of the society took place. The following officers were elected for the ensuing year:

President—Mr. F. J. A. Morris, Peterborough.

Vice-President—Dr. J. M. Swaine, Entomological Branch, Ottawa.

Secretary-Treasurer—Prof. A. W. Baker, O.A. College, Guelph.

Curator and Librarian—Mr. G. J. Spencer, O.A. College, Guelph.

Editor—Dr. J. McDunnough, Entomological Branch, Ottawa.

Auditors—Prof. L. Caesar and Mr. J. A. Flock.

The directors were re-elected save that Dr. J. D. Detwiler was appointed director in division No. 5.

THE ENTOMOLOGICAL SOCIETY OF AMERICA

At the very successful annual meeting of the above society, held in Toronto during the week of December 28th, the following officers for 1922 were elected. PRESIDENT—Arthur Gibson, Dominion Entomologist, Ottawa, Canada.

FIRST VICE-PRESIDENT—Dr. W. A. Riley, University of Minnesota, St. Paul.

SECOND VICE-PRESIDENT—Professor R. A. Cooley, University of Montana, Bozeiman, Mont.

SECRETARY-TREASURER—Dr. C. L. Metcalf, University of Illinois, Urbana, Ill.

ADDITIONAL MEMBERS OF THE EXECUTIVE COMMITTEE:

Dr. J. M. Aldrich, United States National Museum, Washington.

Mr. Wm. T. Davis, New Brighton, N.Y.

Dr. E. M. Walker, University of Toronto, Toronto, Ontario.

Dr. O. A. Johannsen, Cornell University, Ithaca, N.Y.

MANAGING EDITOR OF THE ANNALS—Dr. Herbert Osborn, Ohio State University, Columbus.

EDITORIAL BOARD:

Dr. W. S. Marshall, University of Wisconsin, Madison, Wisconsin.

Dr. Vernon L. Kellogg, National Research Council, Washington.

Dr. F. E. Lutz, American Museum of Natural History, New York.

Dr. Wm. M. Wheeler, Bussey Institution, Boston 30, Mass.

Dr. E. M. Walker, University of Toronto, Toronto, Ontario.

Dr. S. A. Forbes, University of Illinois, Urbana, Ill.

Dr. A. D. Hopkins, Bureau of Entomology, Washington, D.C.

Prof. A. L. Lovett, Oregon Agricultural College, Corvallis, Ore.

Dr. Frederick C. Muir, H.S.P.A. Experimental Station, Hawaii.

ASSISTANT MANAGING EDITOR—Dr. C. H. Kennedy, Ohio State University, Columbus.

A.W.B.

JOHN MACOUN MEMORIAL VOLUME.

The Ottawa Field-Naturalists' Club have issued a prospectus of the proposed autobiography of the late Professor J. Macoun, Canadian Explorer and Naturalist, who occupied the position of Director and Naturalist to the Geological Survey of Canada. It is expected that a sufficient number of subscriptions for this Memorial Volume will be received and that the same will be published and ready for mailing in the autumn of 1922. It is expected that the manuscript will make a volume of between 300 and 400 pages. The Treasurer of the Committee, Mr. Arthur Gibson, Dominion Entomologist, Birks Building, Ottawa, is receiving subscriptions for the price of the Volume, namely \$3.00.

